WIELAND

ZENOTEC easy

Operating Instructions Version 1.0

WIELAND

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1 Basic Information

1.1 Intended Use

ZENOTEC easy is a milling machine for production of restorations and is part of the ZENOTEC CAD/CAM system.

ZENOTEC EASY has been developed to fulfill the needs of the dental industry. ZENOTEC easy is not suitable for conventional milling techniques.

1.2 Using these Operating Instructions

- Chapter 1 contains general information
- Chapter 2 contains safety information for working with the system
- Chapter 3 provides information on the technical data and configuration of the system
- Chapter 4 provides information on set-up and taking the machine into service
- Chapter 5 describes the operation of the system
- Chapter 6 covers the necessary maintenance and care
- Chapter 7 provides information on correcting faults that may occur
- Chapter 8 provides information about the disposal of the system
- Chapter 9 contains general information for the customer

These Operating Instructions should not be discarded for the duration of use of the device.

2 Safety Information

Attention!

Read these Operating Instructions carefully before connecting and starting up the machine! As with all technical systems, proper functioning and safety can only be guaranteed for this machine if both generally used safety precautions and the specific safety information in these Operating Instructions are observed.

1. Installation and startup of the machine may be carried out by an authorized WIELAND Service technician only.
2. The machine should not be used except in accordance with these instructions. WIELAND shall not be held liable for any damages caused by the use of this machine for any other applications.
3. The machine may only be operated with those materials and accessory parts already approved by WIELAND. The use of any non-approved materials and accessory parts (i.e., milling cutters) can result in damage to the machine or to the materials tooled by this machine. In such cases, we rule out any liability for damages on our part.
4. Before taking the machine into service, the operator must verify that the power supply voltage at the installation location matches the voltage indicated on the type plates of the individual components. Incorrect power supply voltage can destroy the machine and its components.
5. Do not insert any objects into the machine to prevent the danger of electric shocks. This does not apply to the proper replacement of parts in accordance with these Operating Instructions.
6. Always disconnect the machine from the power supply before completing any maintenance work.
7. Never operate the machine at locations where water or other liquids may enter the device or PC.
8. The floor space for the machine must be sufficiently stable; please note the permissible floor load.
9. The machine may only be opened and/or repairs completed by authorized WIELAND Service technicians.
10. Please note that a milling cutter mounted in the milling spindle can cause injuries.
11. The milling machine may only be operated with original WIELAND accessories or with WIELAND authorized accessories. Only original WIELAND parts may be used when replacing parts in accordance with these Operating Instructions. No liability is assumed for damages resulting from the use of non-authorized accessories or non-original parts.
12. Do not place the milling machine in areas where there is danger of explosion.
13. Be sure to lay the power line and data line in such a way that personnel cannot trip over them and so that the lines cannot be damaged.
14. Any changes made to the milling machine or its components without the written authorization of WIELAND will invalidate the EC declaration of conformity.
15. Avoid breathing in the dust created during the cleaning of the machine.
16. Clean the machine only with suitable cleaning agents (standard, non-scouring household cleaners).
17. Mobile phones should not be used in the vicinity of the machine. Interfering influences on the CNC controls cannot be ruled out.

2.1 Safety Equipment

Emergency off switch:

On the control panel of the milling device, there is an emergency off switch within you can stop the machine as quick as possible. The emergency off switch must always remain unobstructed and freely accessible.

Please note: The machine's main switch has no emergency stop function.

Protective cover:

The protective cover is the cover which enables access to the area in which work is performed with this machine. The protective cover shields you during operation from hazards as well as from the formation of dust and the occurrence of noise. The machine's casing shields you from moving tools and parts, reduces the noise level and retains the chippings. During operation, the protective cover is locked and cannot be opened. This safety device may neither be removed nor modified.

Monitoring of protective cover:

The protective cover is monitored. If the protective cover is open, the machine cannot be activated.

Cover lock:

During operation, the protective cover cannot be opened.

Cover button:

The cover button enables the opening of the cover – and with that, the access to the area in which work is performed with this machine. The operation of the cover button is only possible when the machine is not moving in any axis or spindle.

Before activating the machine, the protective cover must be re-closed and the safety latch must catch.

The cover must be opened to equip the machine with the material to be milled and with milling tools.

2.2 Further Safety Information

Accessories

The installation of accessory parts to the machine – as well as any other modifications – is as a rule not permitted. In exceptional cases, modifications require prior approval by **WIELAND Dental + Technik GmbH**.

Any fixtures and modifications which can impair the operational safety of the machine may not be installed or carried out.

Environmental protection

To prevent environmental damage, always dispose of spent resources properly. Observe the safety tips on the data sheets.

Blancs

Always ensure that blancs are securely fastened.

Particulate matter / respirable dust

In the course of the milling process, particulate matter / respirable dust forms. Particulate matter / respirable dust is hazardous to one's health. Always ensure sufficient ventilation in the event of dust formation due to the handling of materials. Always ensure that the suction installation is functioning properly. Work on any materials may only be performed in areas equipped with an appropriately-equipped suction installation.

Machine interior

Always ensure that no loose tools or objects are in the machine's interior. If the machine's operational processes are blocked, this blockage can lead to a defect on the device – and with that, to significant property damage.

2.3 Symbol Key

In these Operating Instructions, specific symbols are used to emphasize particularly important sections. All sections marked with one of the symbols indicated here must be observed particularly carefully.

DANGER!

Personal injury will result from failure to carefully follow these instructions!

This symbol is used in every section where lack of attention to proper operation can lead to **personal injury or even life-threatening situations**, or where a manner of working which deviates from the indicated description and is therefore not appropriate can result in **damage to the installation and/or to the machine**.

WARNING: Danger to Life!

Electricity can be life-threatening! This symbol is used to emphasize those sections which warn of the presence of voltage and the associated hazards.

WARNING: Danger of Fire and Explosion!

This symbol is used in every section where lack of attention to proper operation can lead to the danger of fire and explosion - and with that, to personal injury or even life-threatening situations.

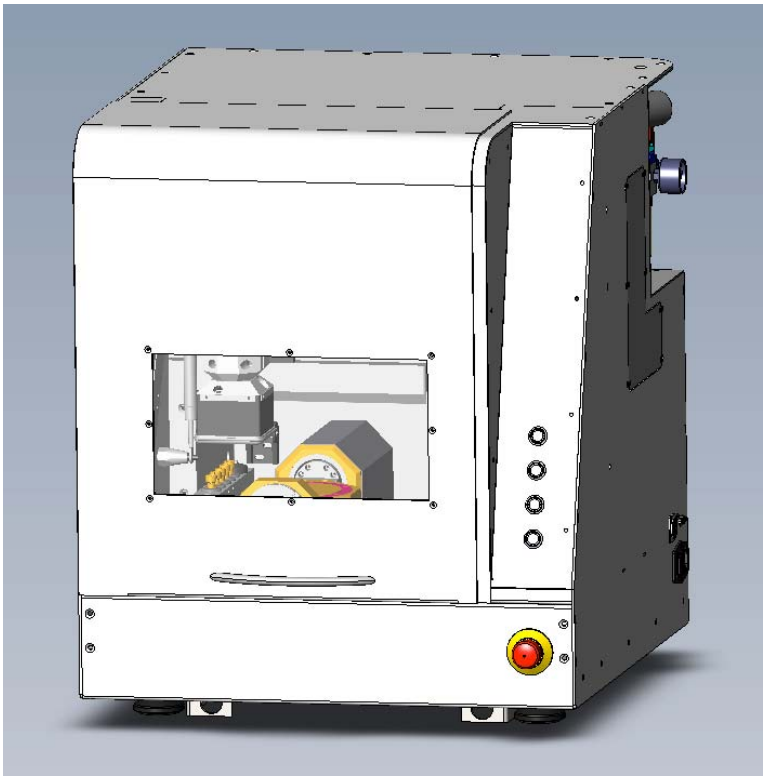
WARNING: Danger of Crushing!

This symbol is used in every section where lack of attention to proper operation can lead to personal injury.

3 Machine Description

ZENOTEC easy is a computer-controlled precision milling machine. Together with the other components of the ZENOTEC system, this machine serves the production of dental restorations.

The ZENOTEC easy is a tool machine with three linear axes and a rotational axis. The machine is controlled via the buttons on the machine and via computer.



ZENOTEC easy

3.1 Technical data

The following tables feature a summary of the technical data for this milling device. The compliance with the indicated specifications is the unconditional requirement for proper operation of the milling unit as well as for the continued validity of the accompanying warranty.

3.1.1 Milling Machine

Dimensions when closed (WxHxD), in mm	620 x 695 x 640
Dimensions when open (WxHxD), in mm	620 x 1140 x 640
Weight, in kg	approx. 130 kg
Actuator type	AC servo motors
Control	CAN-Bus control iSM 5
Protective cover	Pivoting cover (to be raised)
Guides	Precision steel guides in X, Y, Z axes
Ranges of motion	X axis: 145 mm Y axis: 190 mm Z axis: 105 mm A axis: 360 degrees
Encoder resolution	X, Y, Z axes: 1.25 µm A axis: 0.0009 degrees
Necessary air pressure	6–9 bar (with constant application)
Necessary air volume	100 L/min
Voltage / frequency / power input	230 V / 50 Hz / 1.5 A or 115 V / 60 Hz / 3 A
Nominal output	550 W
Noise level (milling in plastic, with closed cover)	< 70 dB(A)
Min./ max. ambient temperature	min. 18 C up to max. 25 C
Maximum setup height	2000 m above AMSL
Fuse (microfuse 5x20 mm)	T10AH / 250V UL/CSA

3.1.2 High Frequency Spindle

Casing	Ø 33 / 52 mm
Collet expansion range	3 mm
Acceleration/deceleration value	10,000 U/sec
Max. rpm	100.000 rpm
Temperature control	via PTC
Weight	approx. 1.1 kg

3.1.3 Suction Unit

Negative pressure	Min. 12,000 Pa up to max. 20,000 Pa
Air volume	Min. 60 m^3/h up to max. 115 m^3/h

3.2 Ambient/Installation Conditions

Please note: The delivered devices may not be operated for a given time period following a sudden change in the ambient temperature. Otherwise, the devices can be damaged by the formation of condensation.

The data for ambient temperature and humidity are configured for AMSL conditions.

3.2.1 Milling Machine

Operation

Ambient temperature: min. +18 C up to max. +26 C
(deviation in the temperature-range can lead to losses in precision)
Humidity: max. 60%, non-condensing
Maximum setup height: 2000 m above AMSL

Storage precautions

Ambient temperature: min. +10 C up to max. +50 C
Humidity: max. 80%, non-condensing

Transport

Ambient temperature: min. -10 C up to max. +55 C
Humidity: max. 80%, non-condensing

3.2.2 Pressurized-Air Connector

The connected pressurized air must **expressly** conform to the following conditions:

Specification according to the norm ISO 8573-1, Pressurized air for general applications, Section 1: Contaminants and Quality Levels

Air pressure P	6-9 bar

Air purity

Solid contaminants	Class 3 – filtration level better 5 µm for solids
Water content	Class 4 - maximum pressure dew point +3° C
Total oil content	Class 3 - maximum oil content 1 mg/m^3

4 Set-up and Initial Operation

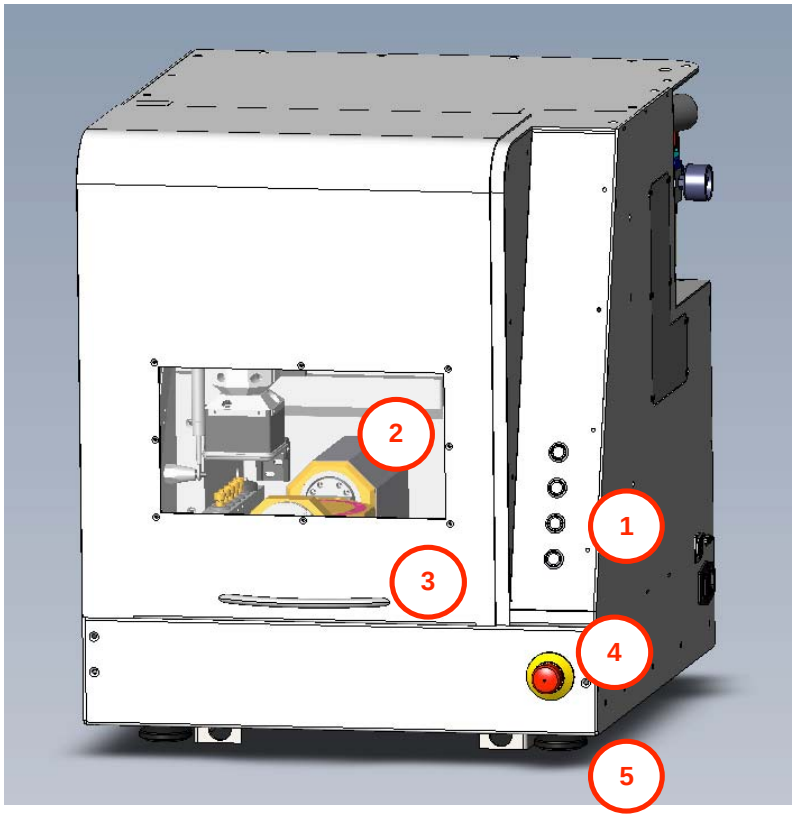
4.1 System Set-up

The specifications for the exterior dimensions in the Technical Data refer to the dimensions when closed. In addition, on the right-hand side of the machine, there must be sufficient space available for cable and hose connectors (min. 150 mm). Behind the machine, there must be sufficient space available for ventilation (min. 150 mm). The machine is equipped with a pivoting protective cover. In order to be able to open it completely, sufficient space must be available in the front and above. Total height when opened: 1140 mm.

The machine is activated via software, with the furnished controller PC. This PC must be set up in the immediate vicinity of the machine. To warrant the ergonomically sound performance of such work, we recommend the set-up of the controller PC on the **right-hand** side, next to the milling unit. In front of the machine, sufficient space must be kept clear for proper operation and set-up.

The machine must be set up horizontally, on a firm and level surface. This surface must have sufficient load capacity to hold the machine's weight. Positioning takes place by way of adjustable rubber legs. With that, slightly uneven spots on the base surface can be compensated. The set-up and positioning are performed by duly authorized specialist persons.

4.1.1 Machine Front



1 **Buttons: Power, Cover, Stop, Start**

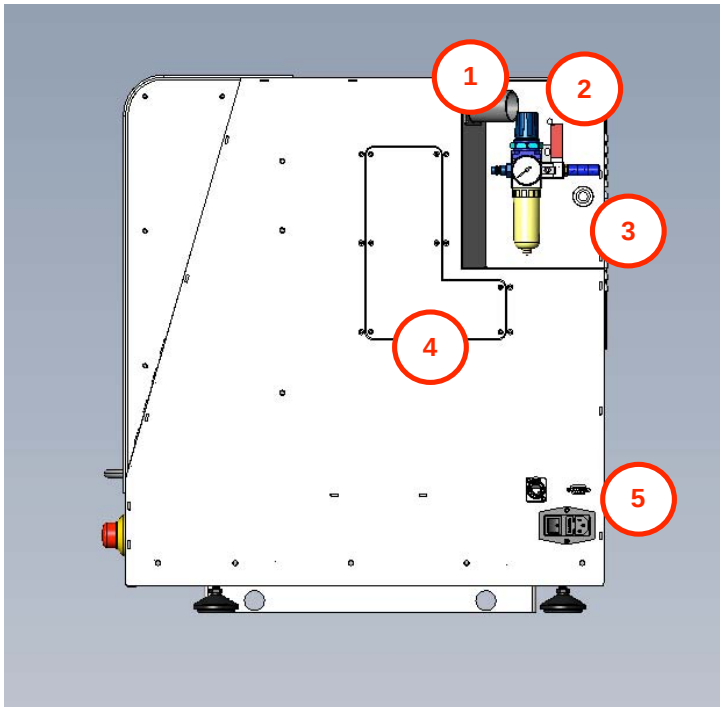
2 **Milling chamber**

3 **Protective cover**

4 **Emergency off switch**

5 **Legs at base**

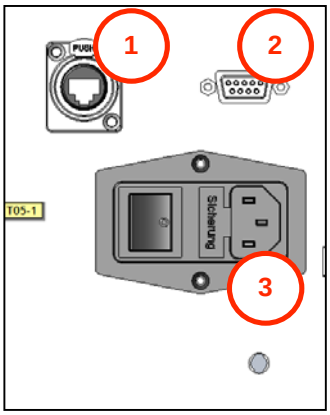
4.1.2 Right Side of Machine



1 **Connector for suction installation**
2 **Pressurized air for maintenance unit**
3 **Pressurized air connector for suction**
4 **Service flap Y axis**
5 **Connector panel**

4.1.3 Connector Panel

1 **CAN connection**
2 **Connector for suction installation**
3 **Power connector**



4.1.4 Suction Installation

Attention:

A suction installation is necessary for the operation of the milling machine. Always use the original TBH suction installation (Type FP150), since this model is designed to conform to the machine's requirements. The use of any other suction installations requires prior approval by WIELAND.

The suction component must be directly connected to the ZENOTEC easy with a controller cable. Connect the furnished controller cable to the 9-poled Sub-D plug (Connector 2).

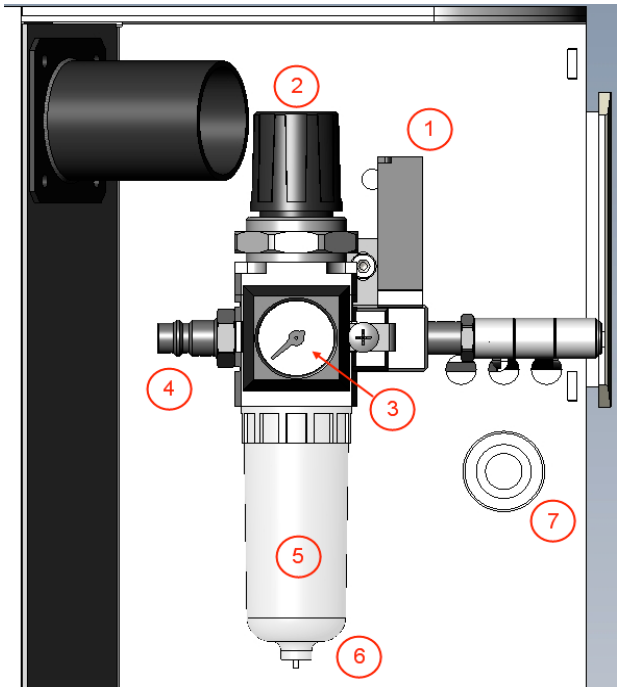
Only connect the original cables to the suction component's controller connector.

Never touch the machine's plug contact when no controller cable is connected. The mode at which the machine is set may be associated with voltage levels which pose a contact hazard.

4.1.5 Power Connector

The power connector serves as a separator. Only use the furnished connector cables! The machine may only be connected to an isolated ground receptacle, since the protective conductor is connected via the power connector line.

4.1.6 Pressurized-Air Connector



1 Minimum-pressure monitoring module (5.8 bar)

2 Adjustment valve for incoming pressurized air (>6-9 bar)

3 Pressure indicator

4 Pressurized-air connector

5 Separator container

6 Drain valve

7 Pressurized-air outlet for extraction

4.2 High-Frequency Spindle

To warrant a long useful life for the high-frequency spindle, the following guidelines must be observed in the course of handling:

Always take precautions and perform work thoroughly. Any application of force (such as strokes, impacts, excess pressure on the shaft or forcible clamping) must be avoided, since these would diminish the precision and useful life of the spindle. For further details, please refer to the separately-furnished operation instructions.

Ball bearings: The spindle's hybrid ball bearing is equipped with a greasing fixture to ensure a long useful life; this feature renders it maintenance-free.

4.3 Startup

4.3.1 Unpacking and Set-up

Attention! Heavy milling device.

During the transport of the milling device, there is a risk of crush injuries and damage to the device.

The transport of the milling device may only be performed using suitable aids (i.e., elevating platform trucks). The hoisting of the device must be performed by the help of elevating devices or by minimum four people. In this process, always wear safety gloves.

1. Remove the packaging. If possible, keep the packaging material for possible use in a subsequent transport.
2. Ensure that all parts indicated in the given scope of supply are in fact included in the delivery package.
3. Check the delivery for any transport damage. Issue any complaints immediately.
4. Transport the milling device to the designated set-up site.

4.3.2 Requirements for the Set-up Site

The set-up site must meet the following requirements, Technical Data and Ambient Conditions:

- Set the milling device onto a dry, level and firm surface.
- This surface must have sufficient load capacity to hold the weight of the milling device. This surface must also be sufficiently stable to compensate the vibrations emanating from the milling device.
- The ventilation openings on the milling device must remain unobstructed to warrant cooling air circulation.
- Two mains outlets and a pressurized-air connector must be located near the device and be freely accessible.
- In the event of relocation (for instance, also after moving the device), the calibration must be checked.

4.3.3 Set-up and Initial Operation

Set-up and initial operation are performed **solely by duly authorized specialist personnel**.

5 Operation

Please note: When operating the milling device, always observe the guidelines "Safety".

The milling device is operated via the controls on the machine, as well as by the activation of the machine via the furnished controller PC with the corresponding controller software.

5.1 Switching On and Shutting Off the Machine

Switching On

Attention: Prior to starting the software, the machine must be switched on!

Switch the milling machine on:
The main switch on the milling device is located on the rear right-hand side of the milling device. After the machine is switched on, the controller for the milling device is booted up; this can take up to one minute.

Switch the controller PC on:
The main switch on the controller PC is located at the device. After the controller PC of the milling device is switched on, it is booted up; this can take up to one minute.

Switch the monitor on:
The monitor's main switch is located on the front of the device.

Shutoff

The device is shut off with the same switches that it is switched on. When the controller PC is shut off, the monitor automatically switches to Standby mode.

To avoid loss of data, it is recommended to close the software before shutting off the machine.

5.2 Referencing the Machine

Please note:

With each start of the controller software "**ZENOTEC easy**", the machine must be referenced. No movements can be performed with the machine if it has not yet been initialized!

Referencing Process:

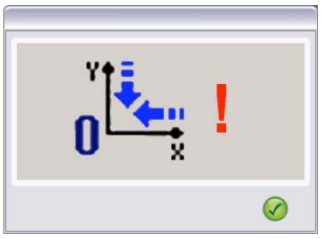
1. After the control PC is started, start the controller software ZENOTEC easy. If the software does not start, you can start it by double-clicking the icon.

2. The initialization process between the control PC and the machine begins.

3. During the initialization process, you will be prompted to switch the output stages on.
   Press the Power button on the front of the milling device.

Please note:
If the Power button on the machine was pressed beforehand, this message does not appear.

4. Then, you will be prompted to execute a reference run. Confirm this message by checking the box.
   Without a reference run, no milling program can be started.



Please note:
Before confirming this message, check the interior of the milling device. No loose objects may be in the interior of the machine which could possible block the movement of the axes!

5. Following this confirmation, the milling device performs referencing for all axes. Following the successful conclusion of the reference run, the machine is in the home position and ready to operate.

5.3 Function of the Controls on the Machine

The machine is activated with software, via the furnished controller PC. However, some of the basic operation buttons are located directly on the machine itself.

5.3.1 Operation Mode “Automatic”

When the protective cover is closed, the machine is in the operation mode “Automatic”. Only in this operation mode can the actuators and milling spindle be activated. When the protective cover is open, the actuators and milling spindle are electronically blocked. A program start can only be performed with the protective cover closed.

If a movement command is nevertheless initiated while the protective cover is open, a window with the protective-cover symbol appears along with a prompt to close the cover. Closing the cover also closes the prompt window, and the movement command is started.

5.3.2 Operation Mode “Set-up”

Attention!

When the protective cover is open, the machine is in the operation mode “Set-up”. The operation mode “Set-up” is used for equipping the machine with material and milling tools or for cleaning. The protective cover can be opened in any axis position when all actuators are shut off. To open, hold the “Cover” button down and open the cover. The actuators and the milling spindle cannot be activated in this operation mode! If an attempt is made to activate an actuator or start the machine when the protective cover is open, the power supply to the installation's output stages is immediately interrupted, and a corresponding error message appears.

Always observe the safety tips!

Cover:

If the button is lit, the cover can be opened by pressing the button.

The cover can only be opened when all actuators are shut off.

Power:

With this button, the output electronics module for the actuators is switched on, as long as the conditions indicated by all safety-relevant features on the machine are fulfilled.

When you start the control software ZENOTEC easy, you will be prompted to switch the “Power” button on.

Emergency off switch:

With this button, you can bring the machine to a halt as quick as possible. All actuators will be shut off without delay. To unlock this button, turn it slightly to the right so that it returns to its default position.

The emergency off switch must always remain unobstructed and freely accessible. Please observe the safety tips.

When you initiate a movement command while the emergency off switch is pressed, the following error message appears:

and then:

Do not unlock the emergency off switch until you are prompted to do so by the menu window.

Start:

The Start button is used to start a milling program. A corresponding milling program can then be selected on the software interface.

If a milling program is already selected, the machine directly starts processing.

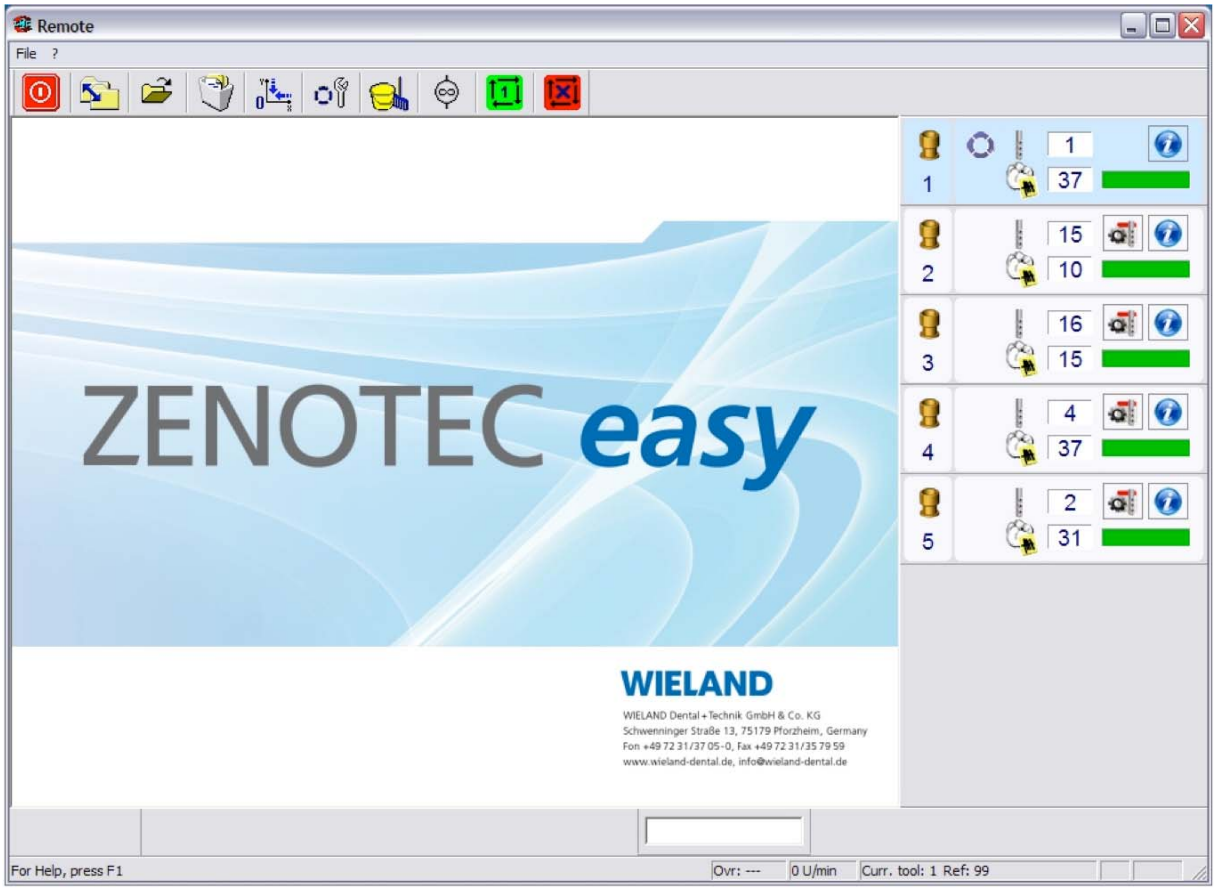
Stop:

The Stop button interrupts a milling program in progress. If the Stop button is pressed once, the work in progress with the current milling program stops on the current position. If the Start button is then pressed, the machine continues the work in progress with the current milling program.

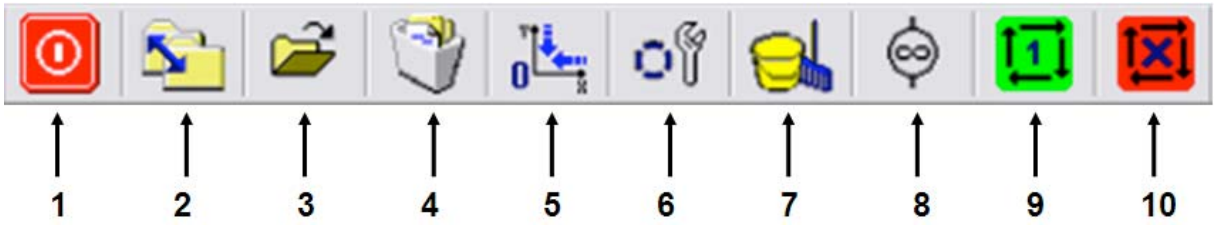
If the Stop button is pressed two times, the milling device stops the work in progress and automatically returns to the home position.

5.4 Structure of the Control Software

5.4.1 Overview Illustration



5.4.2. Function Buttons



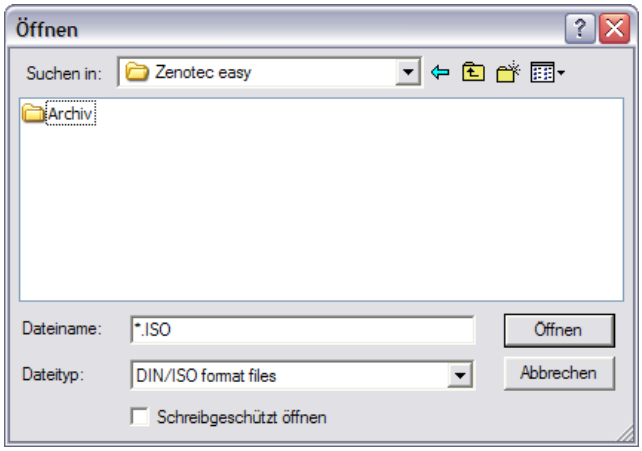
1 Controller reset

This button exits the software and resets the controller. Then, the ZENOTEC easy software must be re-started. To re-start the software, double-click the shortcut on the Desktop “ZENOTEC easy”.

2 Transmission of milling files

With the aid of this button, the milling files will be transferred from CAM and moves to the folder “C:/NC_Daten/Zenotec easy”.

3 Open milling program



Then, select the program to be milled.

The subfolder “Archiv” contains the milling files which have been moved via the function “Archive milling files”

4 Archive milling files

This button moves all files from the ZENOTEC easy folder to the archive folder.

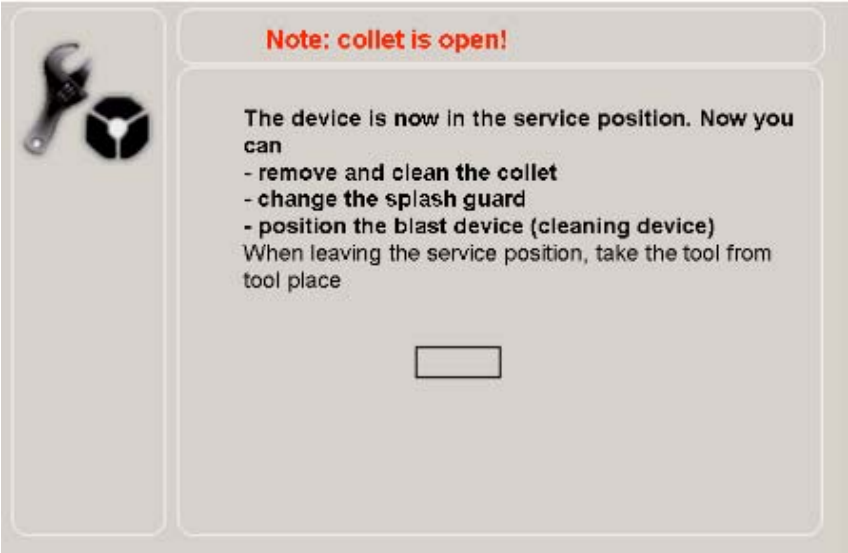
5 Execute a reference run

When this button is pressed, the machine performs a reference run for all axes. After the reference run, the machine is in the home position.

6 Move to service position

When the button “Service function” is pressed, the milling cutter is deposited to the assigned tool place and the Y axis positioned with the open collet in the midpoint across the work piece holding device.

The following dialog window appears:


Note: collet is open!
The device is now in the service position. Now you can
- remove and clean the collet
- change the splash guard
- position the blast device (cleaning device)
When leaving the service position, take the tool from tool place

This function is suitable for:

- being able to clean the collet when it is freely accessible
- being able to replace the splash guard
- depositing a milling cutter already in the collet for replacement
- positioning the air blast nozzle

After the selection and confirmation of a tool place, the corresponding tool is accepted into the collet and measured.

7 Move to cleaning position

With this button, the X axis is moved to the rear in order to enable cleaning under the X axis.

8 Suction on/off

When the suction component (along with a control cable) is connected to the device, you can manually switch the suction on and off with this button for cleaning. In Automatic mode, the suction is automatically switched on and off.

9 Program START

With this button, you start a selected milling program. If a program has not yet been selected, you can access the menu “Open milling program” with this button, in which you can select the corresponding milling program to be run.

10 Program STOP

With this button, you stop a currently-running milling program. The machine then returns to the home position.

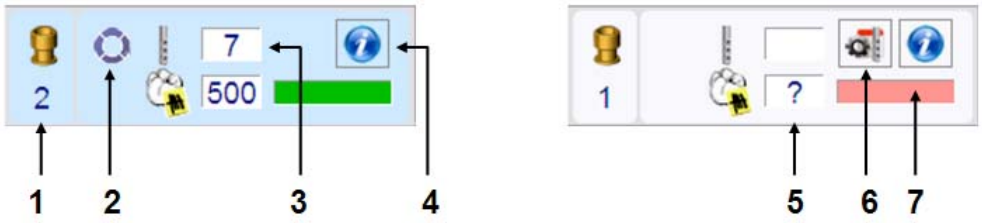
5.4.3 Tool Fields

To enable the proper access by the milling device to the tools, all tools positioned on tool places must be mapped on the software interface. This is the only way to ensure that the milling machine uses the correct tools for performing work.

Caution:

The software does not verify whether the milling cutters registered in the tool fields are also in fact placed in the device. If no milling-cutter type (or the wrong type) has been lodged, this error can cause severe damaged to the milling cutters, the material or the device itself!

The mapping of the tools in the software takes place via the tool fields, which indicate the following functions:



1 Tool place number (symbol: tool holder)

Displays the tool place number.

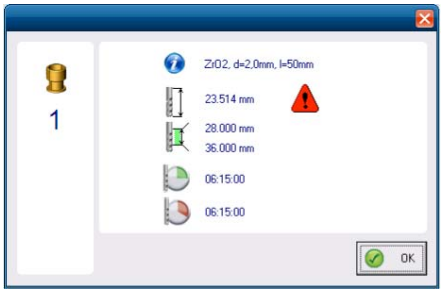
2 Collet (symbol: collet)

This symbol shows the tool which is currently in the milling-spindle. The tool field for the currently-clamped tool also features a blue background.

3 Tool type (symbol: milling cutter)

This field displays the tool type for the respectively used tool.

4 Information field (symbol: i)



In this display field, information such as, i.e., milling-cutter length, life time, etc., is displayed via the assigned milling cutter. If no milling cutter has been lodged, the indicated milling-cutter type is indicated as “???”.

When a new milling cutter is registered in the system, the previous cutter length is automatically deleted and a yellow warning symbol appears. This symbol merely indicates that the cutter length is unknown.

If a value outside of the designated limits is determined during the measurement of the milling cutter (e.g., after breakage of a milling cutter), a red warning triangle appears. This symbol is also displayed in the tool field instead of the symbol “tool holder”.

5 Units (symbol: tooth with tally)

This field displays the number of restoration units which can still be processed with this milling cutter. This value is calculated arithmetically from the remaining life time for the milling cutter and should give an impression of whether one can still work with the given milling cutter. The calculation is based on an average unit size.

During each use of the milling cutter, its actual life time is gauged and deducted from the remaining life time. This means that due to differing life times for individual restoration jobs, errors in estimation of the unit calculation may occur.

For the display value “?”, no value is available – i.e., because no tool type was assigned. If no more units are available on the milling cutter, the number “0” is displayed.

6 Edit tool field (symbol: cog wheel with milling cutter)

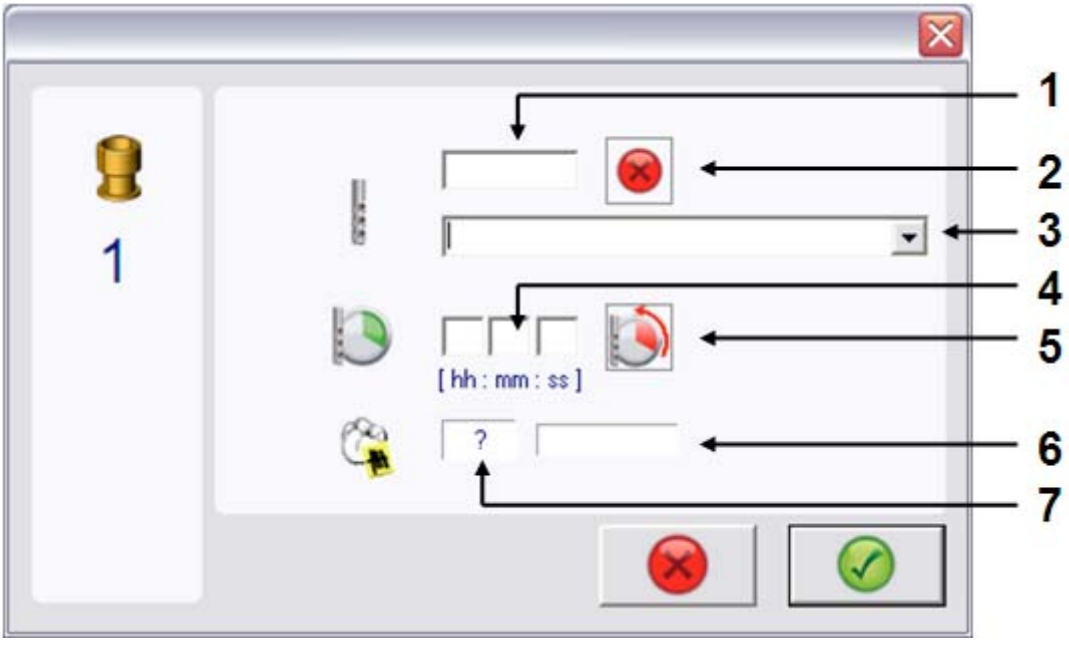
To edit tool fields, this button must be pressed. The function is not active when the milling cutter is deposited in the collet.

7 Unit indicator (display as bar)

The tool's wear is visually indicated with the aid of the bar display. If only approx. 10% of the total units are still available, the bar changes color from green to red.

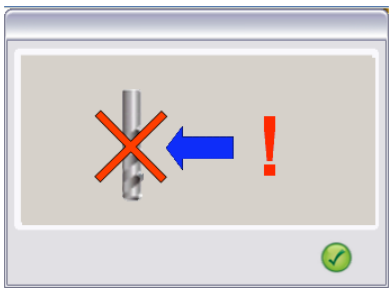
5.4.4 Register Tools to the Software

After pressing the button “Edit tool field” , the following template appears:



1 Tool type (symbol: milling cutter)

In this field, the tool type (milling-cutter type) is assigned to the corresponding tool place. Each tool type can only be registered once. If an attempt is made to register a given tool type to an additional place, the following error message appears:



Please note: The tool field to which the milling cutter is already registered appears highlighted in yellow.

2 Delete (symbol: red x)

This command deletes the value from the field “Tool type”.

3 Tool type list

The registration of a milling-cutter type to the field “Tool type” can also be performed by selecting a suitable milling cutter from the given list. Here, you will also find additional information on the various milling-cutter types:

4 Remaining life time (symbol: milling cutter with clock highlighted in green)

The remaining life time corresponds to the interval up to which a milling cutter can operate without quality losses. Overshooting this value can lead to an increase in quality deficiencies during the milling process (i.e., chipping of Zirconia).

Following the entry to the field “Tool type”, the last remaining life time saved for the given tool is automatically assigned to the field “Remaining life time”. It is possible to change this specification by overwriting the existing value with a new value. However, the input of a value which exceeds the maximum life time for a given milling-cutter type is not possible. In this case, an automatic limitation to the maximum life time for the given milling-cutter type takes place.

When using several milling cutters of the same type, we recommend that you note the value for the remaining life time.

5 Reset remaining life time (symbol: clock highlighted in red)

The “Clock” button reflects the maximum lodged life time for a given tool in the field “Remaining life time”. With this function, the remaining life time for a new milling cutter can be set to the maximum value.

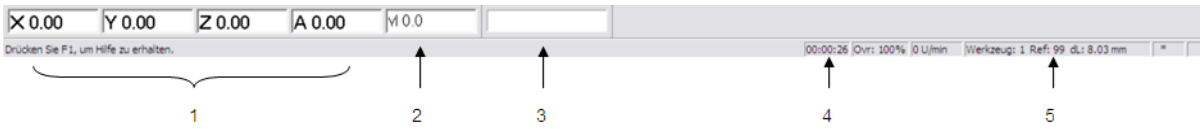
6 Units (symbol: tooth with tally)

This field displays the number of restoration units which can still be processed with the milling cutter.

7 Unit indicator (display as bar)

The tool's wear is visually indicated with the aid of the bar display. If only approx. 10% of the total units are still available, the bar changes color from green to red.

5.4.5 Information Toolbar



1 Current axis positions

Displays the current axis position.

2 Spindle RPM

Displays the current spindle RPM.

3 Progress indicator

Displays (in %) the progression of an already-started milling program.

4 Running time

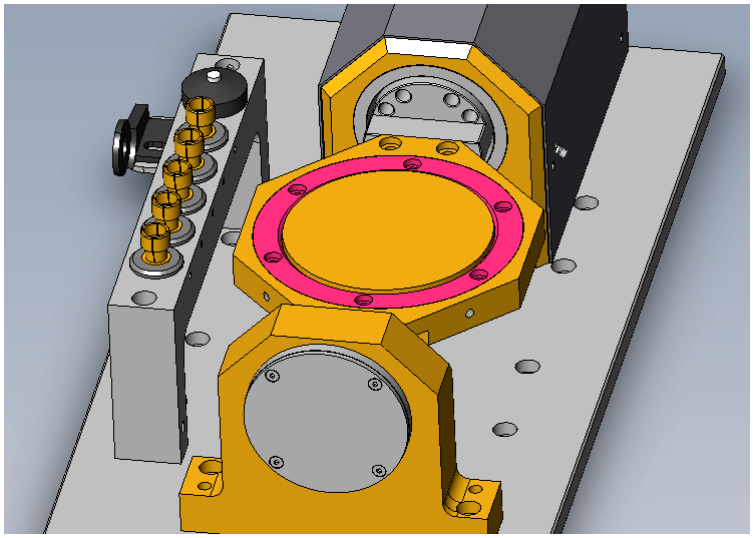
Displays the current running time for the given milling program.

5 Tool information

Displays the tool currently in the collet, along with its virtual length.

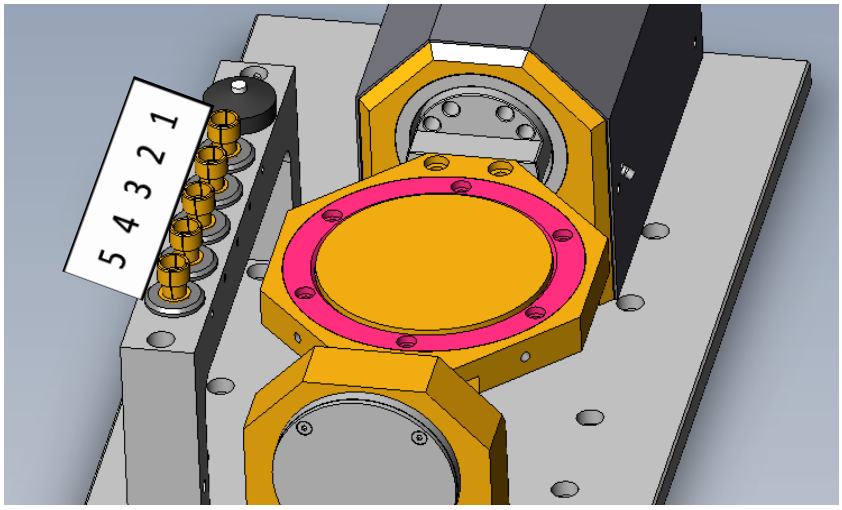
5.5 Operation of the Milling Unit

5.5.1 Insertion and Removal of a Blanc



Insertion or removal of a blanc: open the protective cover of the machine.
Insert the blanc in the fitting position (into the blanc holder).
Then, attach them with six screws. Always ensure that the blanc is securely fastened.
Remove all loose tools or objects from the interior of the machine and close the protective cover.

5.5.2 Tool places



The tool places are numbered as shown in the above picture. A total of 5 tool places are available.

The tool-length gauge button is located above tool place 1.

5.5.3 Tool change

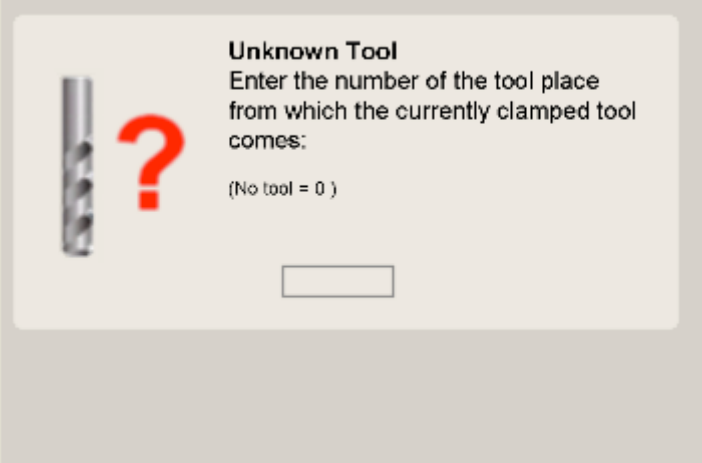
After the elapse of a pre-defined work interval, the milling tools are worn and must be replaced. Replacement is also required in the event of tool breakage.

In general, tools are always replaced in the tool magazine.

Attention!

To be able to replace a tool, you must be familiar with the basic operation of the machine and its control software. This may only be performed by those who have been accordingly briefed on the machine's operation.

If a malfunction occurs when replacing tools and it is unclear which tool is currently in the collet, the following error message appears:



By entering the respective tool place and confirming this entry, the tool change can be concluded. If there is no tool in the collet, enter “0” as the tool place.

Always observe the safety tips!

5.5.4 Equipping the Milling Device with New Tools

In general, tools are always replaced in the tool magazine.

The milling device can be equipped with a maximum of 5 tools. Any tool type can by assigned to any tool place.

Insertion or removal of tools: open the protective cover on the machine. Place the tools with rings attached into the tool places with their blades facing downward.

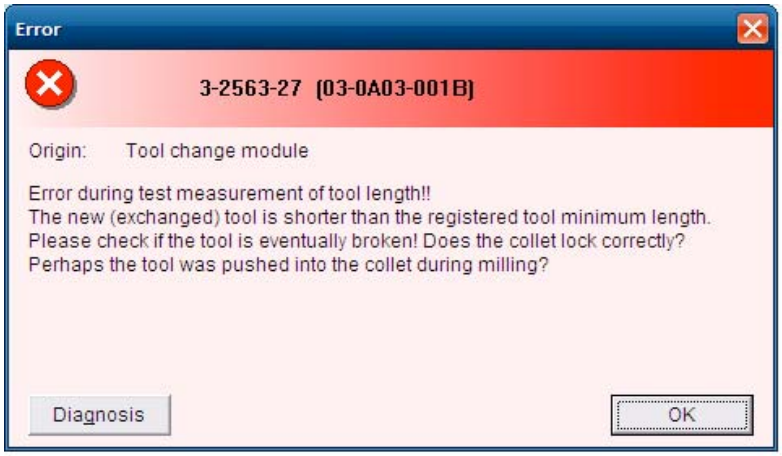
During the insertion or removal of tools, always ensure that you do not strike or damage them.

Set tools to their positions with the corresponding fixation ring until it catches. Always ensure that the tools are in their proper positions.
If a tool to be replaced is in the collet, the milling cutter can be deposited to its tool place with the aid of the service function and removed from there.

5.5.5 Replacing a Broken Milling Cutter

After a tool is accepted into the collet, it is measured for length. In this process, the length of the tool must lie within the range specified for this milling-cutter type. Before a tool is deposited, it is likewise measured once again.

If any deviation is detected in the course of this measurement, the following error message appears:


Error
3-2563-27 (03-0A03-001B)
Origin: Tool change module
Error during test measurement of tool length!!
The new (exchanged) tool is shorter than the registered tool minimum length.
Please check if the tool is eventually broken! Does the collet lock correctly?
Perhaps the tool was pushed into the collet during milling?
Diagnosis
OK

Following the confirmation of the error message with the button “OK”, the broken milling cutter can be deposited and replaced via the service position .

The pertinent tool field displays a red warning triangle instead of the tool place symbol so that defect tools can be identified more easily. This warning does not disappear until the milling cutter has been replaced and the milling socket has been released by the software.

A milling process which may have been interrupted must be re-started from the beginning.

5.6 Milling

Please familiarize yourself with the specifications before starting a milling program.

Please observe the safety tips.

Ensure that the machine has been referenced.
Insert a blanc into the corresponding holder and attach the blanc sufficiently.
Ensure that all necessary milling tools are already in the tool changer.
Close the protective cover.
Select the desired milling program with the menu option “Open milling program”.

To identify the milling files:

In the course of data processing in CAM, a file with the ending .iso is generated (among others). This file contains all data necessary for performing milling work on the ZENOTEC easy. For definite identification, the filename contents the blanc-name with the number of the milling-job.

After the “START” button is pressed, the selected milling-program cycle starts. As an alternative, the milling program can also be started by pressing the “Start” button on the door.

6 Maintenance and Care

Please note:
Regular maintenance and care maintain the machine's operational safety and increase its useful life.

Shut off the machine prior to any cleaning and maintenance work which does not require specific items (service item or cleaning item). Pull the mains plug to prevent accidental activation.

Attention!

Even when the main switch is switched off, some parts of the electrical system are still live. Please wait a few minutes before starting maintenance work.

Always observe the safety tips!

6.1 Cleaning Agents

To clean the machine, use a moist cloth and, if necessary, a suitable cleaning agent. Never use scouring agents!

Cleaning agents which damage plastics, rubber or paint may not be used. Theses can damage hoses (in pneumatics) as well as cables and seals.

Cleaning agents may contain substances which are health hazards. Please always observe the manufacturers' indications.

6.2 Electrical Components

WARNING! Danger to life from electrocution!

All work on the electrical components (such as the connection to the mains as well as maintenance and repairs) may only be performed by qualified specialist personnel.

Even when the main switch is switched off, some parts of the electrical system are still live.

6.3 Pneumatics

Please note: All work performed on the pneumatics installation (such as initial operation, maintenance and repairs) may only be performed by qualified specialist personnel.

Prior to performing any work on the pneumatics installation, the system must be shut off and de-pressurized.

6.4 Maintenance Booklet for the ZENOTEC easy

6.4.1 General Cleanliness

Cleanliness lengthens the useful life of the individual components and prevents malfunctions. Therefore, clean the machine regularly with a vacuum cleaner. In the process, ensure that no dirt reaches the machine's mechanical parts.

Clean the plastic discs and surfaces with a suitable liquid cleaning agent.

Cleaning with pressurized air is not permitted, since fine dust can enter the mechanical parts of the installation and damage them.

6.4.2 Blanc-Fixtures

Dust and chippings must always be removed from the blanc-fixtures and clamping rings before a blanc is inserted to ensure optimum clamping. We recommend the use of a suitable brush for this purpose.

Keep the screws and screw threads clean at all times.

6.4.3 Tool-Fixtures and Length-Gauging Button

Tool-fixtures and length-gauging button must likewise be cleaned to remove dust and chippings; this guarantees a trouble-free working of the device.

Defective or work tool holders must be replaced. In this case, please contact the service department.

6.4.4 Spindle

Attention!

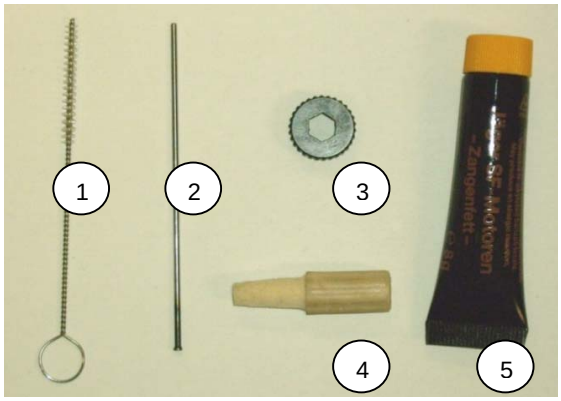
Never spray any sprayable oils, liquids or pressurized air directly onto the spindle-nose, since moisture or dirt can enter the mechanical parts up to the bearings.

The spindle nose and the inserted tools must be clean. Impurities and the increased centripetal force which ensues as a result place a great deal of strain on the spindle bearings.

6.4.5 Collet

For cleaning and maintaining the collet, use the furnished collet-maintenance set.

The collet-maintenance set contains the following:



1 Cleaning brush

2 Ejector rod

3 Screw-attachment part

4 Felt cone

5 Gripper grease

The collet must be removed and cleaned at least once a week, as well as after each incidence of tool breakage. It also must be checked for possible damage.

Important:

Never close the collet without a tool inserted! If the spindle rotates without a tool, it may be destroyed as a result!

Proper procedure for cleaning:

Move the spindle to the “Service position”.

Ensure that the shaft is not rotating. Open the collet with the button “Service position” .
With the screw-attachment part (3), unscrew the collet from the shaft.
Then, clean the cone in the shaft with the designated felt cone (4).
Clean the collet with the designated brush (1).
Ensure that there is no more dirt in the collet and that no dirt is transferred to the collect in the course of cleaning. If a tool should break off and a remnant remains stuck in the collet, you can remove it with the aid of the ejector rod (2).
Apply a light grease film (gripper grease (5)) to the exterior cone of the collet. Then, manually screw the collet back into the spindle. The collet must be screwed in until it catches (hand-tight).
If the collet cannot be manually screwed back until it catches, please use the screw-attachment part (3).
End the service position. Then, the spindle is ready.

Caution:

Extensive skin contact with the gripper grease can lead to skin irritation and/or dermatitis.

The following precautions are recommended:

Avoid extensive and intense skin contact.
After completing work and prior to taking breaks, make sure to clean your skin thoroughly.
Preventive skin protection by the use of protective agents is recommended.
A safety data sheet for the gripper grease can be obtained from WIELAND.

6.4.6 Positioning the Cleaning Pipe

To achieve the most effective cleaning process, the cleaning pipe must be positioned towards the milling-cutter tip. Insert the ejection rod (2) into the pipe and move the pipe so that the ejector rod touches the milling-cutter tip in order to position the pipe.

Then, remove the ejector rod once again.

6.4.7 Water Separator

Attention!

On the right side of the machine, there is a water separator. This device extracts the remaining moisture from the pressurized air. However, the condition for its proper operation is the use of clean, dry and oil-free pressurized air.

If nevertheless water accumulates in the inspection window, there is a drainage screw below the inspection window. By turning this screw, you can empty the water separator.

The water separator must be checked at least once daily and emptied if necessary. **If impurities occur, always have the pressurized-air supply checked!**

6.4.8 Guide Rails and Motor Shafts

The guide rails and motor shafts require little maintenance and are equipped with a long-term lubrication fixture. These are, if necessary, re-greased in the context of maintenance work performed by specialist personnel from WIELAND.

6.4.9 Control Calibration Body

To test the accuracy of the milling machine, you should mill one calibration body per month.
Send the calibration body to the WIELAND Service Team for evaluation. If positioning system adjustments are necessary, these will be completed through the remote maintenance system by WIELAND.

6.4.10 Regular Maintenance

Maintenance Checklist	
Prior to each start of the machine	Clean the acceptance of blanks, tool acceptances, tool shaft for all tools and length-gauging button.
Daily maintenance	Check the water separator and empty if necessary. **If impurities occur, always check the pressurized-air supply!**
Weekly maintenance or after a tool failure	Remove the collet, then clean it and check for damage; also grease the cone. Clean the collet acceptor with the furnished felt cone.

7 Faults and Error Messages

Error	Possible cause	Possible solution
The unit cannot be turned on	Power connector not available	Plug in the mains plug
	The main switch is not switched on	Turn on the main switch
The POWER button does not work	The machine is not turned on	Switch on the machine
	The cover is not closed	Close the cover
	Emergency off has been pressed	Unlock emergency off
Reference run not performed properly	Power is not switched on	Switch on Power
	Cover is not properly closed	Close cover properly
	Communication error	Shut off the machine and shut down the control computer's operating system. Then, wait 30 sec before once again switching the machine and PC on. Close the protective cover. Switch on Power. Re-start the control software
The propulsion engine is not responding	Connection between the machine and the controller PC is interrupted	Check the connection and re-establish it as necessary
	No voltage supply to output stage	Re-start the control software. Switch the output stages on with the POWER button.
	The cover is not closed	Close the cover and re-start the control software
Cover cannot be opened	An axis is in motion. The spindle is rotating	Wait until the program cycle has ended. End the program cycle manually
Collet cannot be opened	Pressurized air supply too low	Check pressurized air level (min. 6 bar)
The spindle does not work	No clearance by the software	Re-start software and try again
	The cover is not closed	Close the cover

7.1 Error Messages in ZENOTEC easy

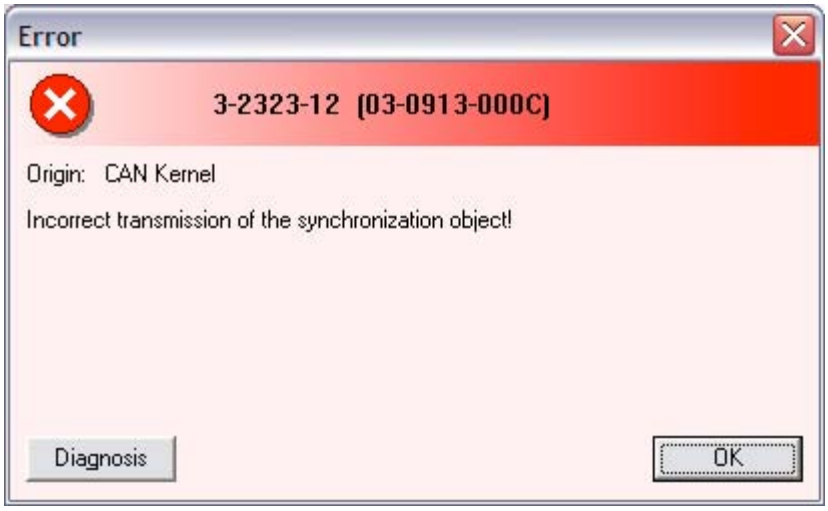
Possible cause:	Solution:
Control software started when the machine is shut off	Close the control software, switch the machine on, re-start the control software and follow the dialogue on the screen
No communication between the machine and the controller PC	Check the connector line between the controller PC and the machine

Error
3-2691-34 (03-0A83-0022)
Origin: IO Administrator
Error during initialization of a periphery output channel! The initialization of an analog output channel for accessing a peripheral device could not be executed correctly. Please check the configuration of the peripheral devices.
Diagnosis
OK

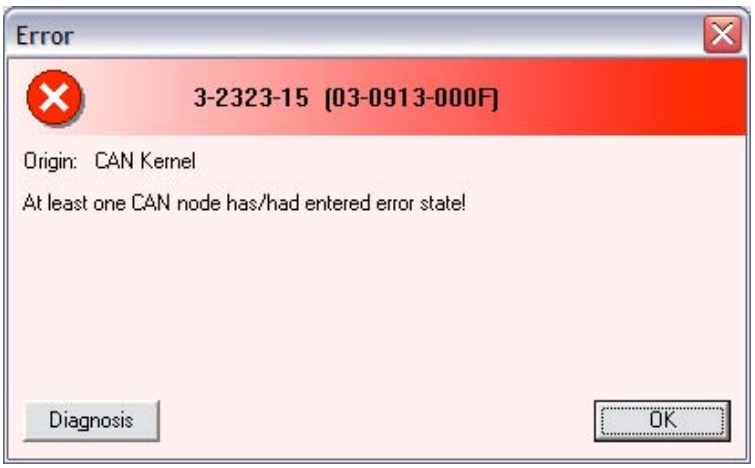
Possible cause:	Solution:
Control software started when the machine is shut off	Close the control software, switch the machine on, re-start the control software and follow the dialogue on the screen

No communication between the machine and the controller PC	Check the connector line between the controller PC and the machine

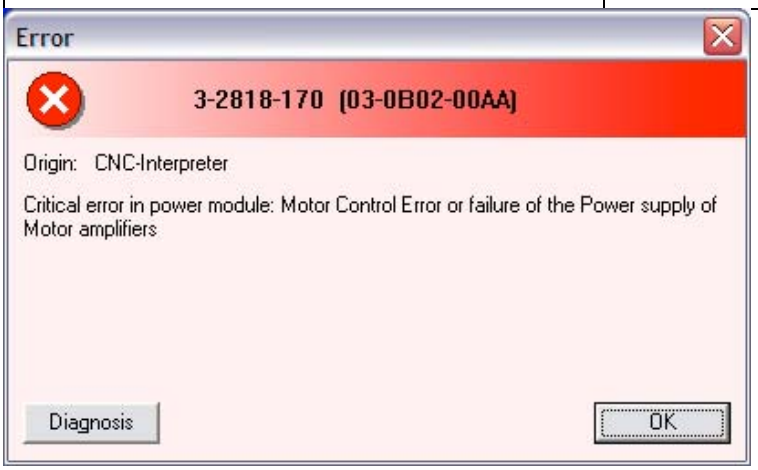
Possible cause:	**Solution:**
Control software started when the machine is shut off	Close the control software, switch the machine on, re-start the control software and follow the dialogue on the screen
No communication between the machine and the controller PC	Check the connector line between the controller PC and the machine



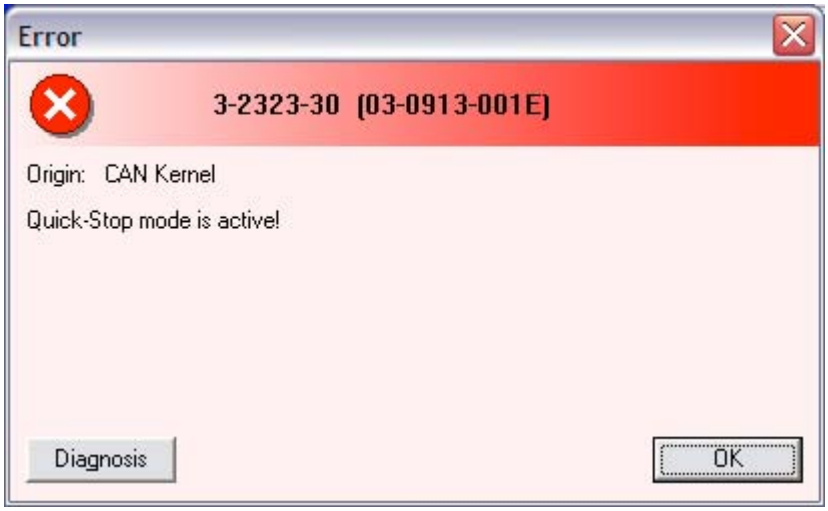
Possible cause:	**Solution:**
Control software started, Power not switched on	Close the control software, switch the machine on, re-start the control software and follow the dialogue on the screen
Attempt to perform a movement process when cover is open	Close the cover
Communication error during a movement process	Close and re-start the software



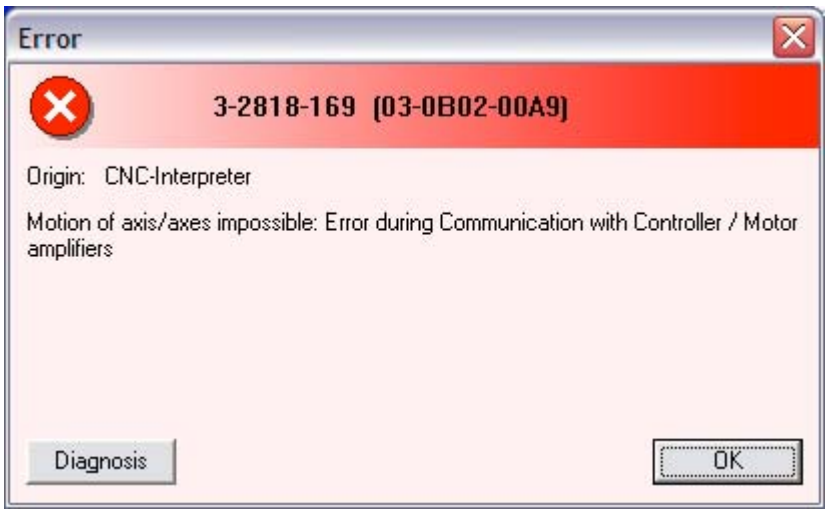
Possible cause:	Solution:
EMERGENCY OFF has been pressed	Unlock the EMERGENCY OFF and, if necessary, re-start the software
Control software started, Power not switched on	Close the control software, switch the machine on, re-start the control software and follow the dialogue on the screen
Attempt to perform a movement process when cover is open	Close the cover
Communication error during a movement process	Close and re-start the software


Error
3-2818-170 (03-0B02-00AA)
Origin: CNC-Interpreter
Critical error in power module: Motor Control Error or failure of the Power supply of Motor amplifiers
Diagnosis
OK

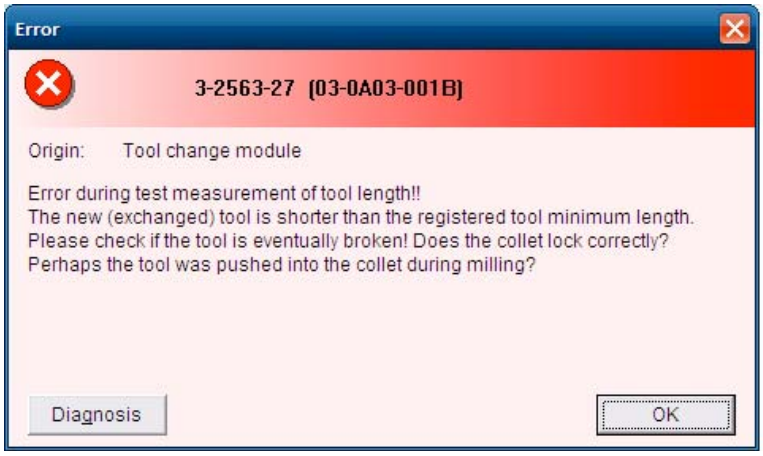
Possible cause:	Solution:
EMERGENCY OFF activated while program is running	Unlock the EMERGENCY OFF and, if necessary, re-start the software
Interruption in the power supply to the output stages	Close the control software, switch the machine on, re-start the control software and follow the dialogue on the screen



Possible cause:	Solution:
Cover open at program start	Close cover, perform reference run, re-start program
Safety circuit activated	Check to see whether the cover is properly closed, Power is set to ON and the EMERGENCY OFF is unlocked. Restart the software.



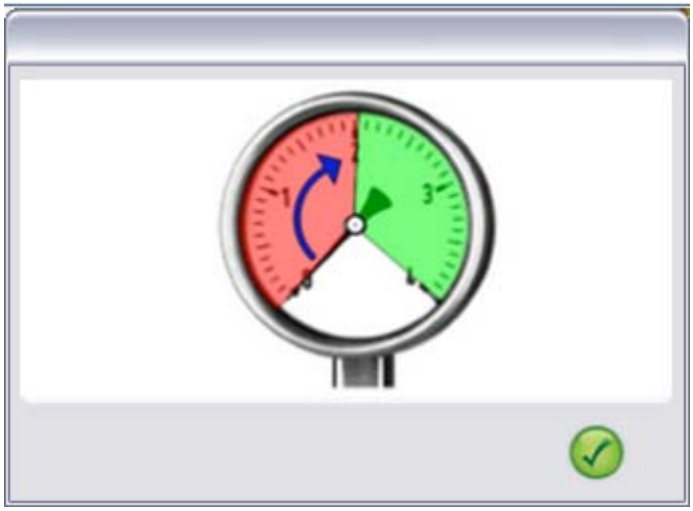
Possible cause:	Solution:
Communication error between the controller PC and the machine's output stages	Check the connector cable between the controller PC and the machine. Restart the control software.


Error
3-2563-27 (03-0A03-001B)
Origin: Tool change module
Error during test measurement of tool length!!
The new (exchanged) tool is shorter than the registered tool minimum length.
Please check if the tool is eventually broken! Does the collet lock correctly?
Perhaps the tool was pushed into the collet during milling?
Diagnosis
OK

Possible cause:	Solution:
Tool length irregularity, tool too short	Move the machine to the service position. Check the following items: - the affected tool for the possibility of breakage or attachment of the wrong ring, - the possibility of having attached the wrong tool. - Check and clean the collet.

Error
3-2692-29 (03-0A84-001D)
Origin: Tool change Administrator
Error while executing the control survey of the tool!
The length of the current tool exceeds the maximum length specified in the tool properties. Please check the occupancy of the tool holder.
Diagnosis
OK

Possible cause:	Solution:
Tool length irregularity, tool too long	Move the machine to the service position. Check the following items: - the affected tool for the possibility of breakage or attachment of the wrong ring, - the possibility of having attached the wrong tool. - Check the proper position of the collet and clean it.



Possible cause:	Solution:
Pressurized air supply too low	Check the machine's initial pressure level. The machine continues the ongoing process as soon as sufficient pressure is introduced

Please contact the WIELAND Service Team for assistance or information if other faults occur.

8 Return of Old Electric and Electronic Equipment for Disposal

1. Collection

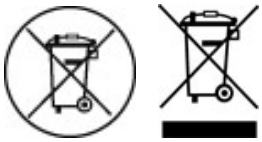
Users of electric and electronic equipment are required to collect their old equipment separately from other waste in accordance with the regulations of the specific country. Old electric and electronic equipment must not be disposed of with unsorted household waste. This separate collection is a prerequisite for recycling and reprocessing as an important method for preserving environmental resources.

2. Return and Collection Systems

When your ZENOTEC easy is no longer usable, do not dispose of the device with household waste. WIELAND has set up special disposal facilities to handle the equipment. For details please contact WIELAND.

3. Meaning of the Symbols

The EU Directive prohibits the disposal of any electric or electronic devices marked with these symbols in combination with household waste.



9 Customer Information

No person is authorized to provide any information that deviates from the information provided in this instruction sheet.

9.1 Warranty

IMES-ICORE warrants this product will be free from defects in material and manufacture. IMES-ICORE MAKES NO OTHER WARRANTIES INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. User is responsible for determining the suitability of the product for user's application. If this product is defective within the warranty period, your exclusive remedy and IMES-ICORE's sole obligation shall be repair or replacement of the IMES-ICORE product.

9.2 Limitation of Liability

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Information valid as of August 2010

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